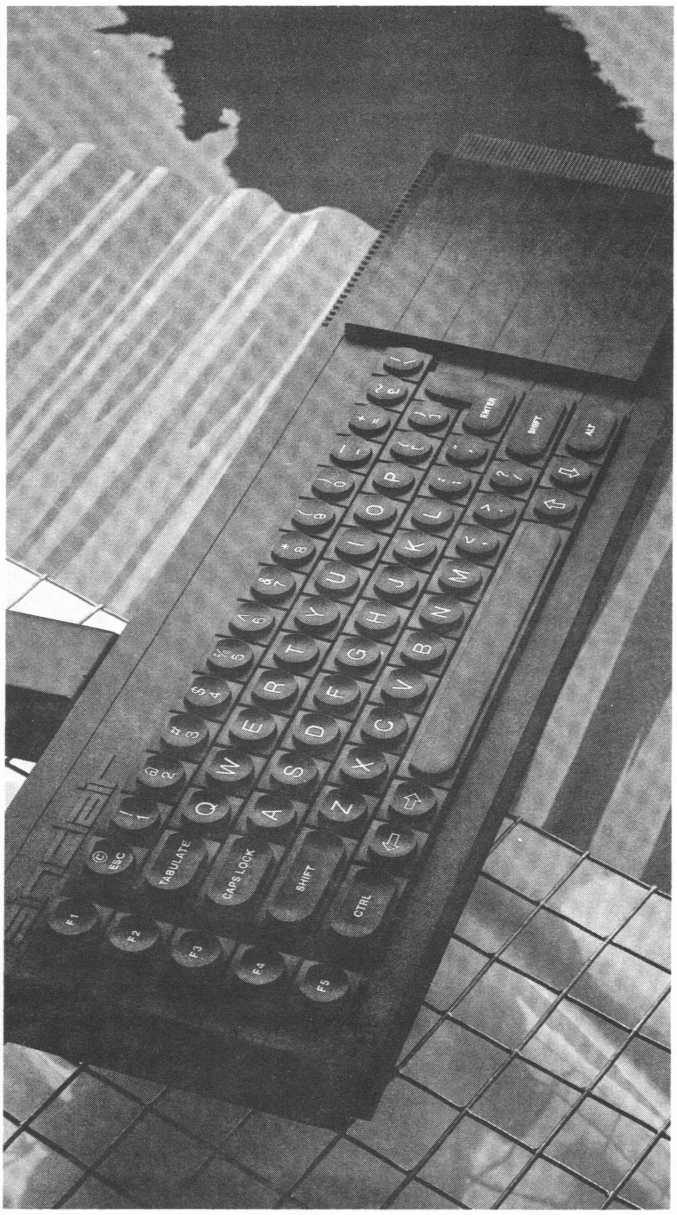
S TS 1000 | U TS 1500 | M TS 2068

THE SINCLAIR/TIMEX USERS MAGAZINE

$1.50

Volume III | FEBRUARY 1985 | Number 2



The Sinclair QL which we hope to see in the U.S. soon

The February Report

With this issue, we start bulk mailing due to the increase for first class coming February 17. Also, with our circulation up to almost 500, your tongue gets a little tired of licking stamps! I hope this will not cause anyone any inconvenience due to the delay that bulk mail has (according to the post office, it can take from a week to ten days longer than first class).

Aerco has just announced that they have their disc drive system for the 2068 available and CPM is coming soon. The interface is $99 and for now, so are the 400K drives. Cabinet and power supply are another $99 putting the total at just under $300. Write for more details at Box 18093, Austin, TX 78760. (512)451-5874

TIME DESIGNS is a new 2068/1000 related magazine published bi-monthly on high quality 8 1/2 X 11 paper. The issue we got had 28 pages in it and had several interesting articles and ads. Write for more information at 29722 Hult Rd. Colton, OR 97017

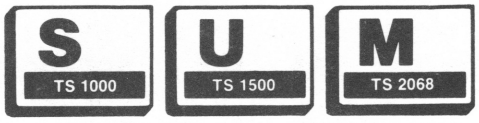
WMJ Data Systems is now publishing Quarters, a quarterly publication for the T/S user. 4 Butterfly DR. Hauppauge, NY 11788 (516)543-5252

Zebra Systems now has a new 48 page Winter/Spring 1985 Timex catalog.

Request one from 78-06 Jamaica Ave. Woodhaven, NY 11421 (718)296-2385

M. H. Marks Enterprises at 315 Thornberry ct. Pittsburgh, PA 15237 (412)486-1694 lists a handicapping program for horse racing and a stock market and options program for the ZX81/TS1000 computers.

Poretsky & Poretsky Inc. 521 Argyle Brooklyn, NY 11218 (718)469-5948 (evenings) has SPEC-TAX for the 2068 in preparing 1984 income tax returns.



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D. Lipinski Software has a buyers guide to Sinclair-Timex products & Services. 2737 Susquehanna RD. Roslyn, PA 19001

K. D. V. H. E. Publishers, PO Box 6788, Chicago, Ill 60680 lists several new books and Software for the ZX81/ TS1000/TS1500

Back Issues of SUM Available

A complete set of August through December issues are all available for $6.25. Single back-issues are available for $1.50 each. Each include:

AUGUST--Spectremulator: a hardware project for switching between the Spectrum and the 2068 ROM's; TASWORD II review; pokes for TASWORD II using the Aerco interface; Software review of GOLD!

SEPTEMBER--Completion of Spectremulator article; 2068 schematic; TMK color monitor/TV review; ZX/TS repair guide, part one; Textwriter 2000+ review; expanding UDG's; HORACE GOES SKIING and HORACE AND THE SPIDERS review.

OCTOBER--ZX/TS repair guide part two; BUGABOO review; ZX/TS schematic; Modem tips for using a full size printer; VIEWord review.

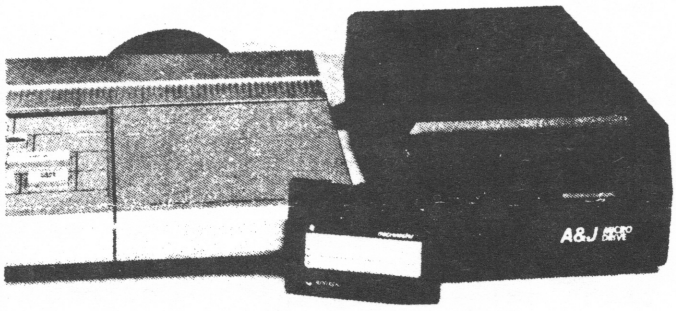
NOVEMBER--TASPRINT review; ZX/TS repair guide part III; 16K RAM pack schematic; 2068 with Spectrum ROM software update; M-SCRIPT review; The Woodward Report; Pokes for Spectrum TASWORD II using the Aerco interface.

DECEMBER--Spectrum buss for the 2068 project; OmniCalc 2 review; Complete TEXTWRITER series review; WMJ Data Systems overview; Ramblings.

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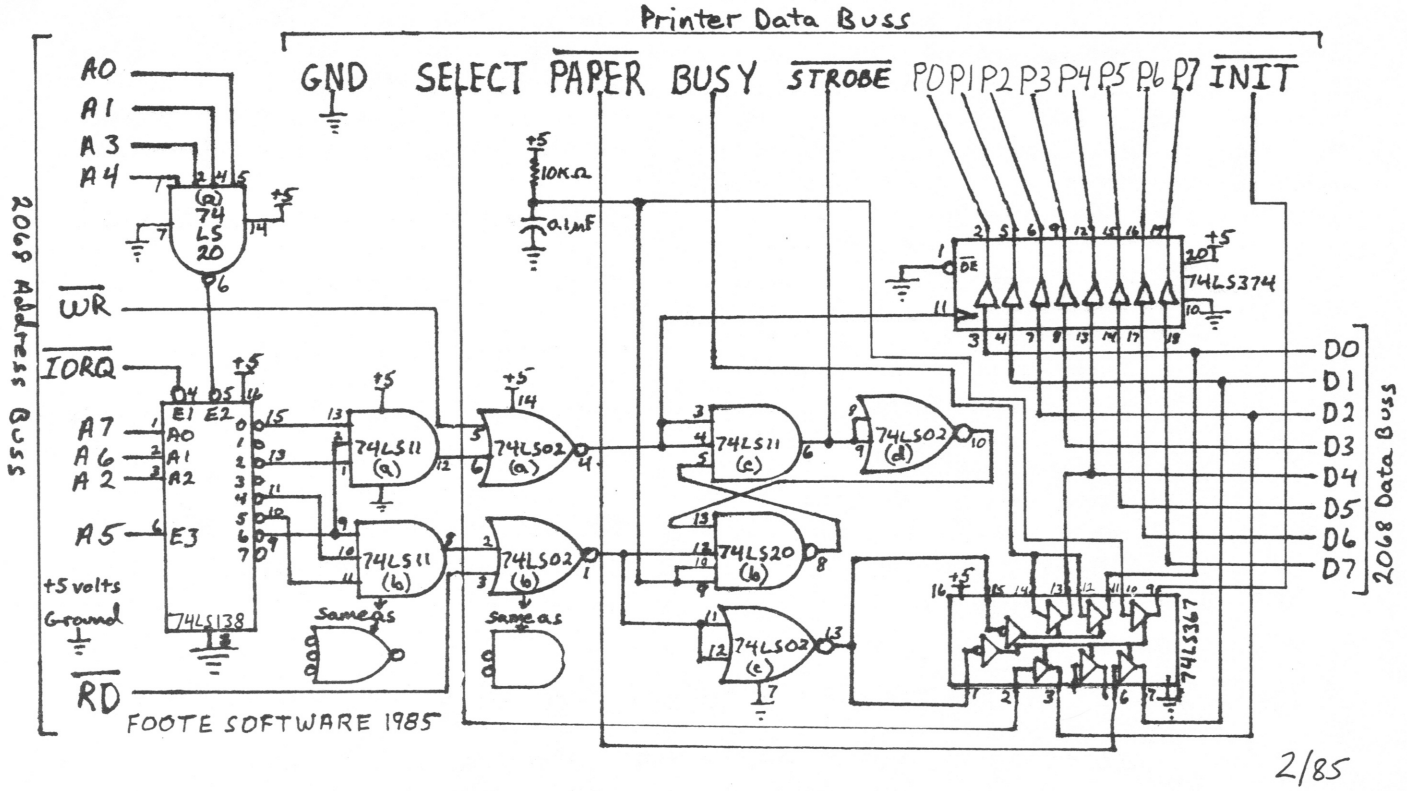
Last month when I started my article for the printer interface, I came up with the idea of using the cartridge port. I had designed the printer interface using the rear edge connector on my 'proto-board' and everything worked great on that. As I was writing the article, I changed heading and actually altered the schematic without implementing the changes using the cartridge port.

Since then, I have built a proto-type and actually do use it (In fact, for this article). I cut an edge-card board down to size and mounted the components and had room to spare. The wire from the interface comes out where the door meets the bottom edge and bends around and out from underneath the computer. The cartridge door closes perfectly and there is plenty for room for the ribbon cable to exit unerneath the computer.

Using the cartridge port seemed a logical idea with all the other peripherals I had hanging off the rear edge connector. little room was left for anything else. I started laying out the printed circuit board and realized (again) that another improvement was in order.

Why not add an EPROM holder to the board and have a combination printer interface/EPROM board? So I scrapped the layout I had almost finished and started laying out one that would hold the EPROM board schematic shown in the 2068 technical manual. This required a little more time and work and as of this writing, I'm not quite finished so I'll have to wait till next issue to print my masterpiece.

Fortunately, all the signals needed were available from the cartridge port with the exception of RESET which is not absolutely needed but could be emulated using a 'poor man's reset' which is a resistor - capacitor combination which will



Schematic for 2068 Printer Interface

bring the common line between the two to a low (logic 0), simulating RESET.

You will notice that last month, I connected the 'poor man's reset' directly to the INIT of the printer and to the R-S flip flop combination (74LS11(C), 74LS20(B), and 74LS02(D)). This allows the printer to reset the interface, but when you turn on the computer, it's possible to fill the printer's buffer with nonsense characters because the INIT line floats high to logic 1 and won't allow the computer to bring it low when it powers up.

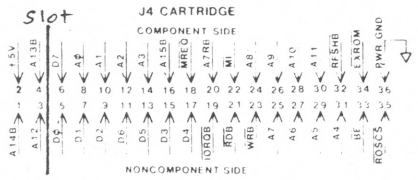
This is really no big deal and can be cleared by simply sending something to be printed to the printer.

Hardware wise, there is a simple solution. Instead of going directly to the INIT line of the printer, go through one of the unused buffers of the 74LS367 - namely in on pin 10 and out to INIT from pin 9. This will isolate the INIT from the RESET until the computer is turned on which in turn turns on the buffer and resets the printer while RESET is still low.

Please note the correction in this month's issue. Also, the missing pin numbers for the 74LS02(d) have been included.

I finished last month telling how the decoding of the ports work which allows emulating both the Aerco and Tasman interfaces. This finishes the operation with how the data is read from and written to the printer.

The first thing that must be done before data is sent to the printer is to check the status of the printer. The printer must be ready to accept data before any can be sent, otherwise, that data will be lost and only garbage will print.



SELECT tells whether the printer is on line or not and PAPER tells you when the paper has run out on your printer. INIT clears the printer's buffer and resets it. BUSY tells you when the printer is ready to accept new data and STROBE is a signal to the printer telling it to load data into the buffer for printing. These 'handshaking' lines keep everything in order so the proper operation happens at the proper time.

When the interface is powered up, it resets the flip flop into the

continued on page 8

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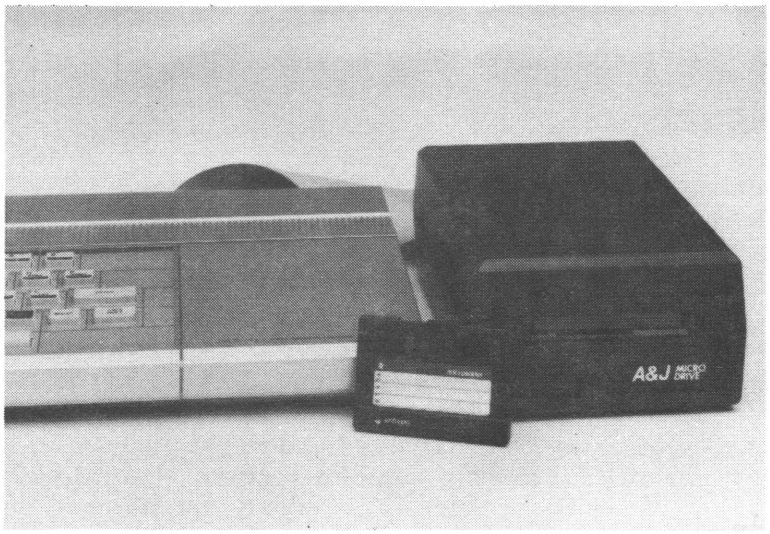
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read state. The printer line that must be checked is the BUSY line. Programs written for the Tasman interfaces check bit 0, those written for the Aerco interface check bit 4. Notice on the schematic that the BUSY line goes through the 74LS367 buffer to both bit 0 and bit 4.

Once the program has determined that it can send data, an out command is done to the printer I/F port placing the printer data on the data buss lines of the computer. This out command 'clocks' the 74LS374 and 'latches' (stores) the data onto the printer data lines. This also toggles the flip flop and 'strobes' the printer, filling the printer's buffer with data to be printed.

This process takes place each time a character is sent to the printer. When nothing is happening, the 74LS367 and 74LS374 are in their 'tri-state' which isolates the computer's data buss so that it can perform other operations.

The EPROM part of the interface is basically the same as that shown in the 2068 technical manual in figure 5.1-1. This is the same configuration as what Doug Dewey uses for his EMU-1 Spectrum Emulator, and what Ray Kingsley and John Oliger use for their EPROM cartridge boards.

I used a 'solder transition connector' (like what Aerco uses) to permanently terminate the ribbon cable to the p. c. board and a standard crimp-on Centronics style ribbon connector on the other end. I have had no problem using this on my Panasonic printer, a Riteman, and the Star (Gemini 10x) printers.

Next month, I will talk about print routines to drive the printer interface and I promise to have the printed circuit board layout.

Joe Williamson

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Beginner's Programming
(Part II)

Last month we started programming with x+y=z. Our meager beginning has revealed the complexity of a simple program. By incrementing one improvement at a time, we can make this program into a piece of professinoal work. Let's first make the computer write the problems for us. Load in last month's program to get started.

The user's manual explains random numbers and the INTeger function. The INTeger and RND function will enter a value for x and y automatically. Let's limit the value of x and y to single digit numbers between 0-9. That will ensure a positive answer. Addition and multiplication present no problem.

In subtraction, the subtrahend must be smaller than the minuend. In division, the dividend (x) must be larger than the divisor (y) in order to ensure a positive number and greater than one. The value of the divisor must be entered first so that the value of the dividend can be multiplied by it to give the dividend the proper value.

In order to give the RANDom number generator a starting point, type in

```
3300 RAND 0
    or
3300 RAND
```

depending upon your computer. Edit line 3300 to lines 3500, 3700, 3900. Type in:

```
3310 LET x = INT (RND * 10)
```

This line can be used in addition, subtraction, and multiplication so edit line 3310 to lines 3510 and 3710. Edit line 3310 to read:

```
3320 LET y = INT (RND * x)
```

Now y can never be larger than x. In division, you cannot divide by 0, therefore the divisor must never be 0. Type:

```
3910 LET y = INT (RND * 9)+1
```

The divisor will never be more than one digit or equal to 0. To keep the answer whole, multiply the random number by the divisor. type:

```
3920 LET x= INT (RND*10)*y
```

Delete 3390, 3590, 3790, and 3990.

Consider now providing feed back for a wrong answer. If x + y does not equal z, how can the computer tell the student? One simple straight forward solution is to present the problem to the computer to solve. Type:

```
3410 IF z<>x+y THEN GO TO 3350
```

Edit this line to 3610, 3810, and 4010 changing the + to - to * and to / as appropriate.

In lines 3380, 3580, 3780, and 3980, change the "= ?" to "= ";z

To select the option we desire calls for a menu. Type in:

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```
3070 PRINT AT 6,0;"IF YOU WISH T
O DO SOME PRACTICE"
3072 PRINT AT 8,3;"IN ADDITION__
______TYPE 1"
3074 PRINT AT 10,3;"IN SUBTRACTI
ON_____TYPE 2"
3076 PRINT AT 12,3;"IN MULTIPLIC
ATION__TYPE 3"
3078 PRINT AT 14,3;"IN DIVISION_
_______TYPE 4"
3079 PRINT AT 16,3;"TO EXIT_____
_______TYPE 5"
3080 PAUSE 0 (OR 4E4)
```

Now to read INKEY$ functions:

```
3090 CLS
3100 LET A$=INKEY$
3110 IF A$="1" THEN GO TO 3310
3120 IF A$="2" THEN GO TO 3510
3130 IF A$="3" THEN GO TO 3710
3140 IF A$="4" THEN GO TO 3910
3150 IF A$="5" THEN STOP
3160 IF A$<>"1" OR A$<>"2" OR A$
<>"3" OR A$<>"4" OR A$<>"5" THEN
 GOTO 3070
```

Statement 3160 will only permit use of numbers between 1 and 5.

I have deliberately steered clear of using CLS (clear screen) very much for now. The CLS is a very handy command in programming. when ever you need a clean slate to write or draw on, enter a CLS command in the program. Experiment a little.

Next month, we will number our problems, limit our loop to ten problems, give the number out of ten correct, personalize our program and start our logo, smiley face.

Bill Woodward

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This program will allow you to change the screen and ink colors in the Tasword II word processor from BASIC to your own choosing.

Up till now, if you go into basic and change the BORDER, INK, and PAPER to your own colors, as soon as you return to Tasword, only the paper and ink stay how you set them while the border and bottom menu revert back to the original black on white.

To make the changes, load Tasword and go into basic by using STOP, press b then ENTER. Enter the following lines:

```
9000 POKE 58488,201
9010 POKE 58598,201
9020 POKE 59987,201
9030 POKE 64568,64: POKE 64569,0
: POKE 64570,0
9040 POKE 64840,58: POKE 64841,1
91: POKE 64842,90: POKE 64844,19
2: POKE 64845,90
```

Once these are entered, go back and carefully check that all the numbers are correct and then enter GO TO 9000. Now enter DELETE 9000, which will remove these lines (don't forget the comma). Return to Tasword by pressing RUN ENTER and go back to the menu by pressing STOP and select the save Tasword option to save these new changes.

To change screen colors, simply select the into BASIC option and type in your choice of BORDER, INK, and PAPER colors.

Instead of going into basic, you could incorperate extra lines into the menu and have it ask you for your selection or if there is a combination you want to stick with, enter them into say, line 5 such as:

```
5 INK (color): PAPER (color):
BORDER (color): CLS
```

Now Edit line 15 to say GO TO VAL "5" instead of GO TO VAL "10". Save any changes you make. Enjoy your enhanced version of Tasword!

Peter Orvis

Ramblings from the Publisher



Welcome to another issue of SUM MAGAZINE. Great things are happening both with SUM and in the Timex computer world.

First, SUM is growing. As a result of word of mouth advertising and an article in the 2/5 U.S.A. Today newspaper which mentioned us, inquiries and subscriptions are coming in at a regular rate. I think this says a lot about the vitality of the Timex market and I hope it says something about the quality of our magazine. As a result of this growth, Joe has already mentioned that we are switching to bulk mailing to save money and keep our subscription price low.

Second, starting with this issue we will PAY for published articles which appear in SUM. Of course, any contributors who wish can waive the payment! This combined with the addition of several new advertisers to our pages should cause SUM to be a bigger bargain than ever. PLEASE MENTION YOU SAW THEIR AD IN SUM WHEN YOU ORDER. This allows them to know where to best spend their advertising dollar and gives SUM a boost.

Hopefully, starting with our next issue, we will go back to a

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letter quality printer for type in the newsletter. I know that dot matrix lets you know it was really done on a computer, but LQ print looks nicer.

MICRODRIVES! We now have two of the A & J Microdrives in use and I can say that I am totally fascinated by them. Saving and loading is a breeze, though you will have to be creative to figure out how to save some commercial software on them. Loading a program and data file that took 6 to 8 minutes on a cassette now takes about 1 minute with the A & J drive. In addition, there is a centronics parallel port included with the unit (which is not mentioned in most of their ads) which is only awaiting the release of software to make it functional.

For all the members of our local user group, be warned. I plan on showing up at our next meeting with a number of items I'd like to "get rid of"--that is, sell--at very reasonable prices. They include copies of English magazines, software, and hardware. Bring money!

-- Richard Cravy

Gainesville TUG Meeting

February's meeting has been moved back to the fourth wednesday, the 27th at 7:00PM. Meetings are normaly on the third wednesday.

At the last meeting, Bill woodward demonstrated his new HOT Z cartridge from Ray Kingsley. The board plugs into the 2068 cartridge slot and utilizes no RAM memory so any program can be loaded and dissasembled using HOT Z. A nice thick manual was included about how to use the program. Bill had just gotten the cartridge and was not entirely up on its use yet but will have a full report hopefully by next meeting.

Also on display was the new Masterfile program for the 2068 from Campbell systems in England. The program is a very powerful database and can be used in conjunction with Tasword II to share data files for personalized form letters.

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